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# Electron temperature and density measurements in large scale-length gasbag plasmas by K-shell spectroscopy

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We present temporally and spatially resolved measurements of the K-shell emission from argon and chlorine dopants in laser-produced mm-size gasbag plasmas. Particularly useful for the diagnostics of these plasmas are the line intensity ratios of the He-like and H-like resonance lines to their respective Li- and He-like dielectronic satellite transitions. By Abel inverting the experimental spectra and applying time-dependent collisional-radiative modeling, local electron temperatures and densities are deduced. About 400ps after beginning of the laser heating we observe a homogeneous plasma center which heats steadily until the end of the heating pulse. Although the heating is slower than predicted by the hyrodynamic code LASNEX, the experimental peak electron temperature of $T_e = 3$ KeV for neopentane filled gasbags is in agreement with the simulations. In addition, electron densities inferred from the line intensity ratio of the intercombination to the resonance line of helium like argon are $10^{21}$ $cm^{-3}$ in the center of the bag. **Further gas fillings have been investigated and lower temperatures with lower gas densities are found consistent with simulations.**

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